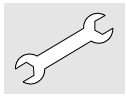


Chapter 3.6

List of Contents

1 Monitor Calibration for AGFA Monitors.....1

1.1 Introduction..... 1

1.2 Measurement Procedures..... 1

1.3 Calibration of the AGFA High Brightness Monitor 1K/2K 3

1.3.1 Requirements: 3
1.3.2 Overview 3
1.3.3 Aspect Ratio Adjustment 3
1.3.4 Calibration of Contrast and Brightness 6
1.3.5 Final Check 13

1.4 Calibration of the AGFA Standard Brightness Monitor. 13

1.4.1 Installing the „Clinton“ software.....13
1.4.2 Overview 14
1.4.3 Aspect Ratio Adjustment 14
1.4.4 Calibration of Contrast and Brightness 16
1.4.5 Final Check 19

1 Monitor Calibration for AGFA Monitors

1.1 Introduction

Basics
For the installation sites of monitors the conflict of high requirements on the viewing of light-reflecting as well as self-luminous objects must be solved. With an increasing light intensity the viewing of light-reflecting objects improves, however, viewing of self-luminous objects, e.g. monitors, gets worse. Therefore, you should try to avoid too high ambient light and light reflections on the screen.

For optimum viewing conditions the defined ambient light intensity values in DIN 6868-57 are recommended (see table 1).

Viewing task	Max. luminous density for white light of the monitor (cd/m²)	Medium ambient light intensity in the center of the monitor (lx)
Diagnostics	100	≤ 10
Diagnostics	500	≤ 50

Table 1

If the ambient light intensity is higher than the recommended values, inform the customer about the bad viewing conditions and try together with your customer to find a way to reduce ambient light.

If this shouldn't be possible, the black level of the monitor has to be readjusted.
This means the contrast will be reduced due to the fact that the maximum luminous density of the monitor is fixed (300 cd/m^2 high-bright, 120 cd/m^2 standard-bright). As a result, it will be more difficult to detect tiny image details on the monitor (see figure 1, next page).

1.2 Measurement Procedures

Required tools for ambient light measurements and monitor calibrations:

- Light measuring tool, e.g. Mavo Digital Luminance Meter (Order No. CM+7.8966.1239.0), which is used in the following description.

To determine the actual ambient light intensity, put the ambient light sensor of the Mavo Digital Luminance meter in front of the monitor, pointing away from the screen. Be sure, that no items are affecting the measurement.

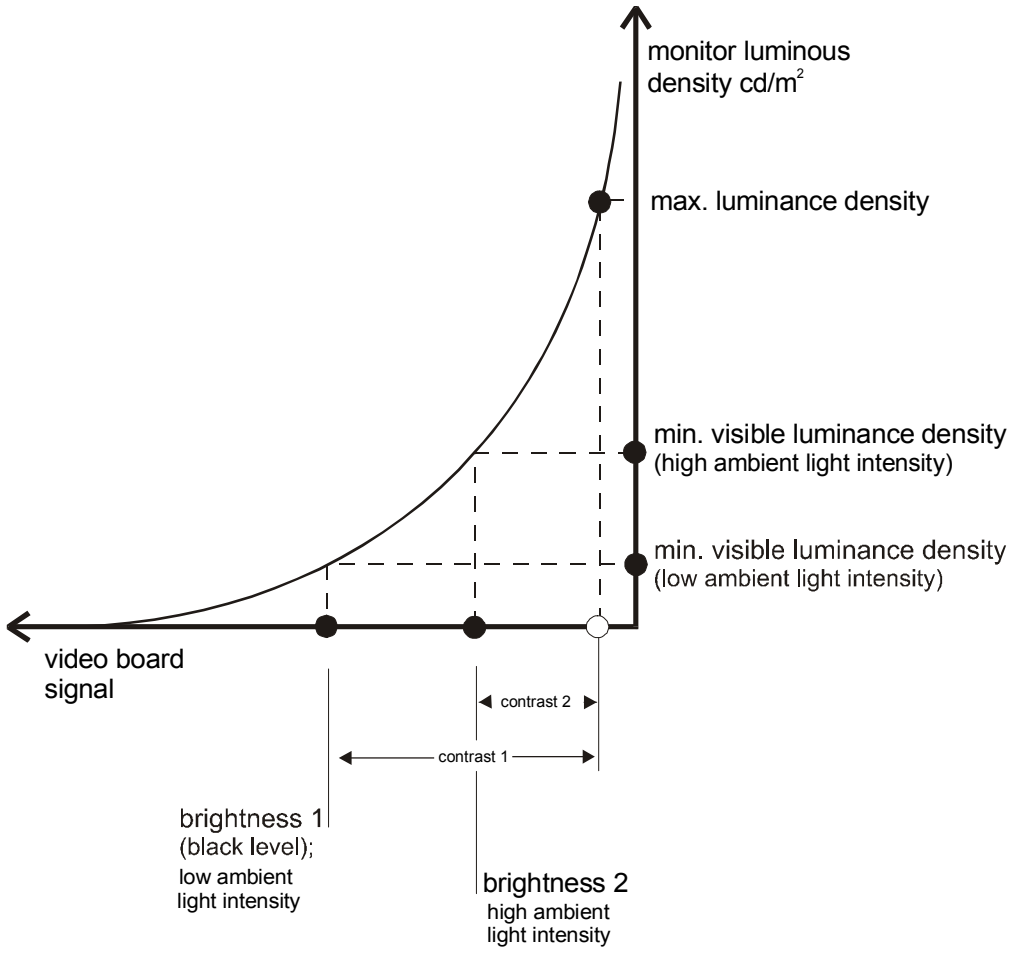

monitor luminous density cd/m²
max. luminance density
min. visible luminance density (high ambient light intensity)
min. visible luminance density (low ambient light intensity)
video board signal
contrast 2
contrast 1
brightness 1 (black level); low ambient light intensity
brightness 2 high ambient light intensity

Figure 1:
Dependence of brightness, contrast and monitor luminance density for a specific γ - monitor curve.

If you choose a luminance density exceeding 300 cd/m^2, the lifespan of the monitor will be reduced drastically.

1.3 Calibration of the AGFA High Brightness Monitor 1K/2K

1.3.1 Requirements:

- AGFA High Brightness Monitor, (with ambient light sensor).
- The monitor must be warmed up for at least 30 minutes.
- The monitor must be located and orientated where it will be used later.
- Ambient light as described in topic 1.
- The ADC-Application must be running.
- Service PC with service software SM-Fit installed (available on Diginet).
- Light measuring tool, e.g. Mavo Digital Luminance Meter (Order No. CM+7.8966.1239.0), which is used in the following description. For different light measuring tools you have to proceed similar.
- Null-modem-cable (e.g. CM+9.9999.10180).
- Floppy drive, empty floppy disk.
- Ruler (about 40 cm)

This calibration procedure takes app. 30 minutes.
Calibration of the monitor is checked during maintenance of the ADC System.

1.3.2 Overview

The calibration has to be done in 2 steps:

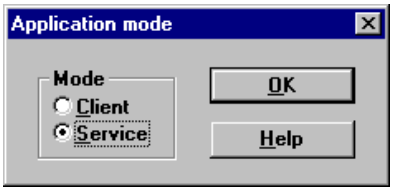
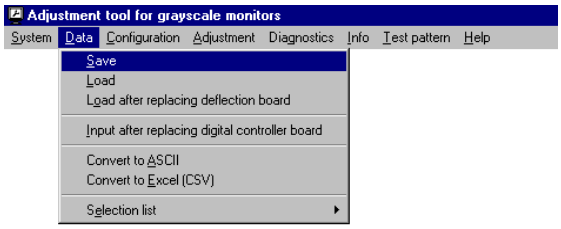
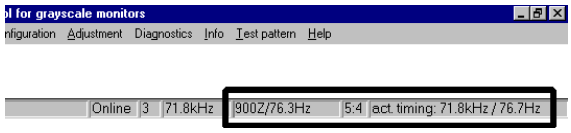
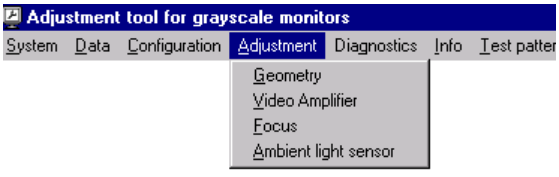
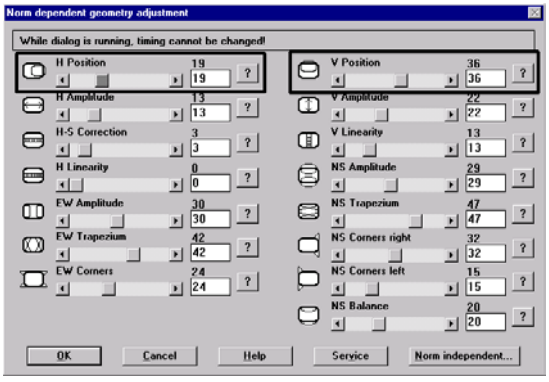
1. Adjustment of window width and height
2. Adjustment of brightness and contrast.

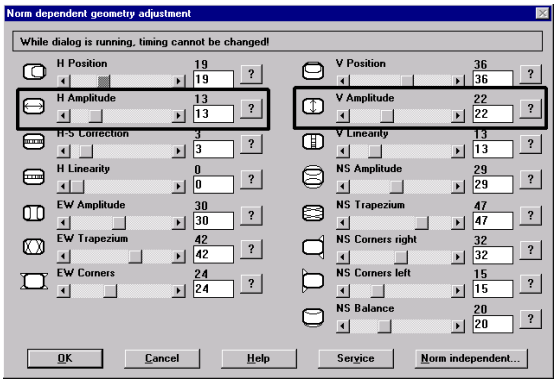
1.3.3 Aspect Ratio Adjustment

Requirements:

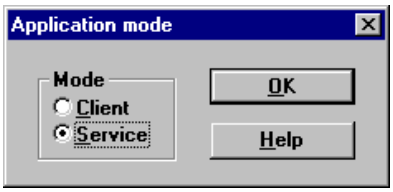
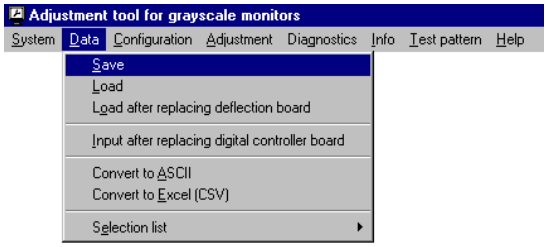
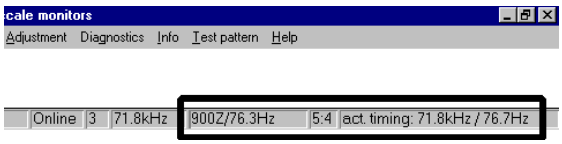
- Service PC with "SM-Fit" Application running
- ADC "Mimosa"- Application running
- Ruler to measure the screen width and height (ruler length about 40cm)

Procedure Steps	Display / Comment
(1) Connect Service PC to the service port at the front of the monitor with a null modem cable.	
(2) Run the „SM-Fit Grayscale“ application on your service PC.	

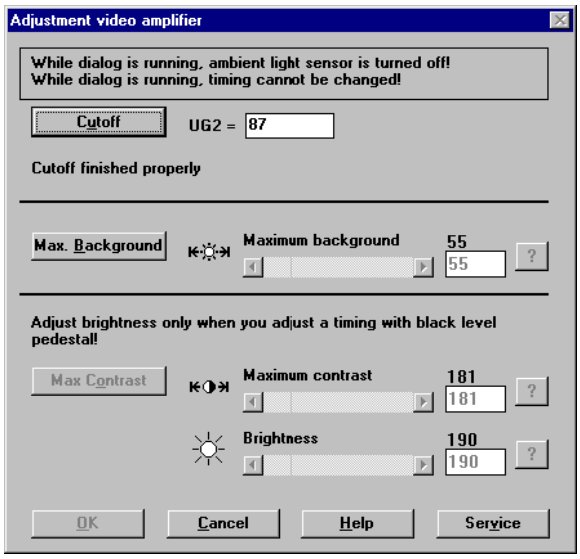
Procedure Steps	Display / Comment
(3) Select <Service> Mode and click <OK>.	
(4) Type in the password (Iif necessary: Select the appropriate serial port)	
(5) Put the floppy in the drive and save the current settings by selecting <Data> <Save>. File name: The last eight digits of the serial number (on the rear side of the monitor).	 Adjustment tool for grayscale monitors System Data Configuration Adjustment Diagnostics Info Test pattern Help Save Load Load after replacing deflection board Input after replacing digital controller board Convert to ASCII Convert to Excel (CSV) Selection list
(6) Check in the bottom line of the screen, if the Vsync has a value of about 76Hz. If you encounter a difference of more than 10%, contact GSC!!	
(7) Select in the Main Screen of SM-Fit <Adjustments> <Geometry>	 Adjustment tool for grayscale monitors System Data Configuration Adjustment Diagnostics Info Test patter Geometry Video Amplifier Focus Ambient light sensor
(8) Move the application window with the sliders "H-Position" and "V-Position" to an exactly centered position.	 Norm dependent geometry adjustment While dialog is running, timing cannot be changed! H Position V Position OK Cancel Help Service Norm independent...

Procedure Steps	Display / Comment
(9) Adjust the screen width 36cm +/-1cm (app. 14-15 inch). 	
(10) Adjust the screen height to 29cm +/-1cm (app. 11.4inch). 	
(11) Check the correct window position again by repeating step (8). If everything is well adjusted, leave the menu <Geometry> by clicking <OK>.	
(12) Save your modifications: click on menu <Data> and select <Save>.	
(13) If you do not want to adjust Brightness/Contrast, click on menu <System> and finally <Quit>.	
(14) Disconnect Service PC.	

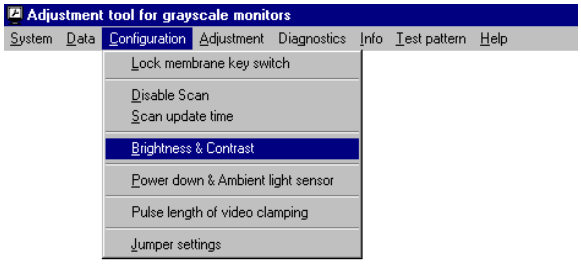
1.3.4 Calibration of Contrast and Brightness

Procedure Steps	Display / Comment
(1) Connect Service PC to the service port at the front of the monitor with a null modem cable.	
(2) Run the „SM-Fit Grayscale“ application on your service PC.	
(3) Select <Service> Mode and click <OK>.	
(4) Type in the password (If necessary: Select the appropriate serial port)	
(5) Save the current settings by selecting <Data> <Save>.	
(6) Check in the bottom line of the screen, if the Vsync has a value of about 76Hz. If you encounter a difference of more than 10%, contact GSC!!	

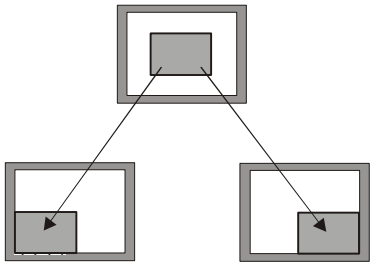
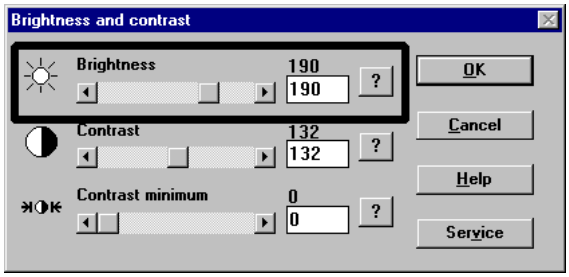
Procedure Steps	Display / Comment

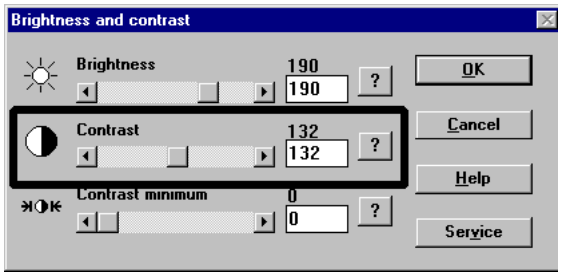
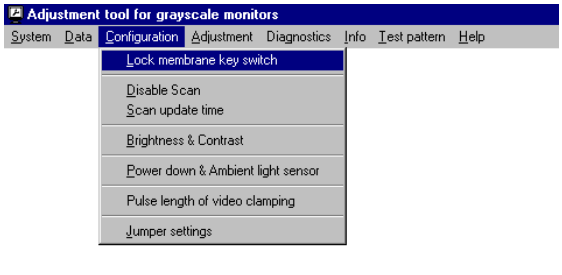
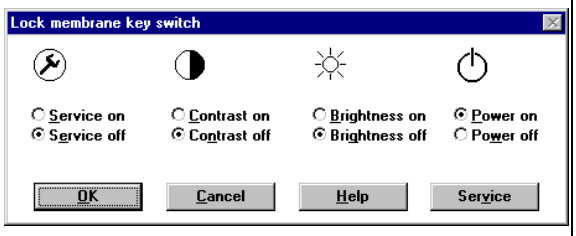
(7) Select menu
`<Adjustment>`
`<Video Amplifier>`
	

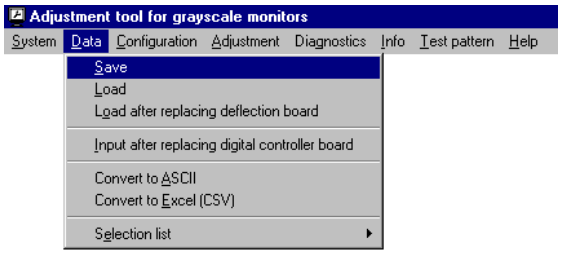
(8) Click the button Wait until you get the message: `Cutoff finished properly` Monitor changes luminescence (9) Click `<Cancel>`	

(10) Select on the Service PC:
`<Configuration>`
`<Brightness & Contrast>`
	

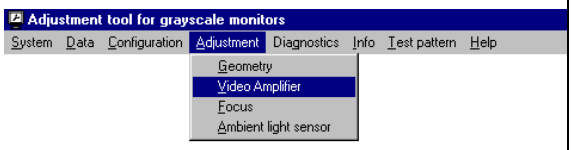
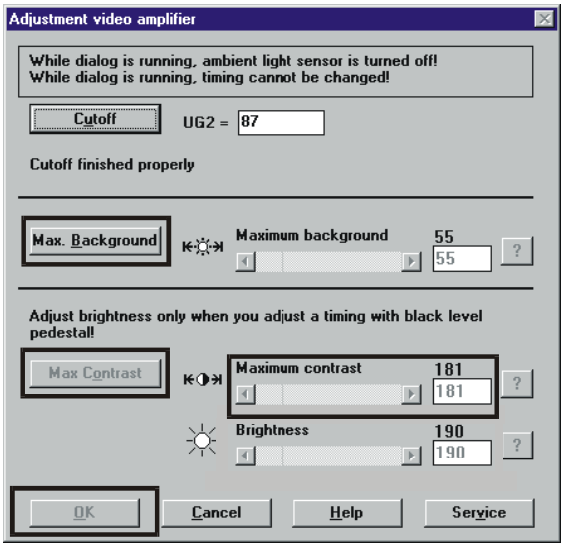
(11) Open a new window on the workstation and type in: **`xterm -bg black &`**	

Procedure Steps	Display / Comment
(12) Zoom the black window to fullscreen mode and shift it to one corner of the screen.	
(13) Set the measuring range of the Mavo meter to 20cd/m².	
(14) Set the brightness value for the black level in a way that you can recognize a little difference between the black level of your „black window“ and the black frame (tube background). Check light output of your black window . If you measure a value of ≤ 0,3 cd/m² the ambient light level is ok. Otherwise try to improve the ambient light conditions. Take care that the shadow cast by the casing of the monitor does not affect the result. If it is impossible to display the little difference, refer to 1.3.4.2	
(15) Create a white window with about 10x10cm and put it right in the center of the screen. `xterm – bg white &`	
(16) Set the measuring range of the Mavo meter to 2000cd/m².	

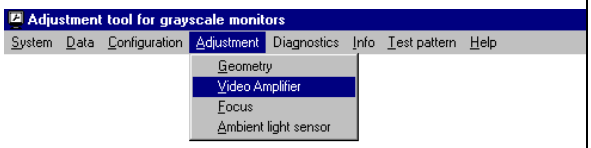
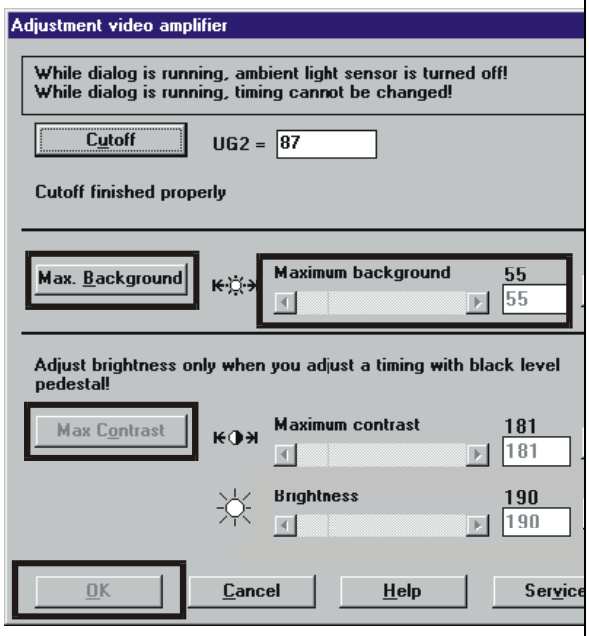
Procedure Steps	Display / Comment
Put the mouse pointer into your white window.	
(17) Set the light output value for the white level to 300 cd/m² with the slider bar <Contrast> (18) Click the „OK“ button to save the adjustments and leave the menu.	
A light output value over 300 cd/m^2 reduces the lifespan of the monitor drastically. If you cannot reach 300 cd/m^2 refer to 1.3.4.1	
(19) Repeat the steps 11 to 16 at least 3 times to make sure, that the values of Brightness and Contrast are correct. This is necessary, because a change of one of these parameters also influences the others. Finally close your white and black windows.	
(20) Check if the user control keys of the monitor are locked by selecting <Configuration> <Lock membrane key switch> and disable all user keys except "Power on". (21) Click <OK>.	 

Procedure Steps	Display / Comment
(22) Save the current settings by selecting <Data> <Save>.	
(23) Exit the SM Fit application by clicking the <System> and <Quit> button.	
(24) Disconnect Service PC.	

1.3.4.1 If you cannot reach the recommended max. monitor luminance density (300cd/m²), proceed as follows:

Procedure Steps	Display / Comment
(1) Select on the service PC: <Adjustment> <Video Amplifier>	
(2) Click on Max. Background (3) Click on button „Max. Contrast“. Increase the slider „Maximum contrast“ Select <OK> to leave the menu.	
(4) Adjust brightness and contrast again as described.	

1.3.4.2 If you cannot reach the recommended min. monitor luminance density for the black level (0,3cd/m²):

Procedure Steps	Display / Comment
(1) Check, if the ambient light level is low enough	
(2) If the ambient light level is low enough, select on the service PC: <Adjustment> <Video Amplifier>.	
(3) Click on Max. Background Increase the value of „Maximum Background“ slider. (4) Click on „Max. Contrast“. Click <OK>. (5) Try again from (12) on (page **Fehler! Textmarke nicht definiert.**). Check correct adjustment of brightness and contrast.	

1.3.5 Final Check

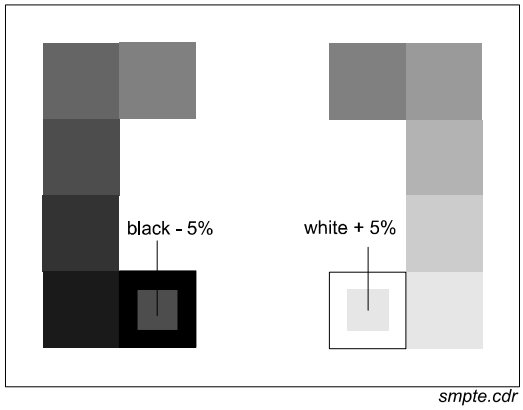
Display the SMPTE pattern:

Click the <Open>-key and right mouse button simultaneously.

Select "Mimosa Maintenance"

- Type in your password
- select **2** -Install-
- select **4** -Monitor-
- select **1** -SMPTE-
- select **3** -to load the SMPTE-pattern-.

The 5% and 95% boxes must be correctly visible.



smpte.cdr

1.4 Calibration of the AGFA Standard Brightness Monitor

Requirements:

- AGFA Standard Brightness Monitor, (without ambient light sensor).
- The monitor must be warmed up for at least 30 minutes.
- The monitor must be located and orientated where it will be used later.
- Ambient light as described in topic 1
- The ADC-Application must be running.
- Service PC with service software „Clinton“ and „User cont“, (available on Diginet).
- Light measuring tool, e.g. Mavo Digital Luminance Meter (Order No. CM+7.8966.1239.0), which is used in the following description. For different light measuring tools you have to proceed similar.
- Null-modem-cable (e.g. CM+9.9999.10180).
- floppy drive, empty floppy disk
- ruler (about 40 cm)

This calibration procedure takes app. 30 minutes.
Calibration of the monitor is to be checked during maintenance of the ADC System

1.4.1 Installing the „Clinton“ software

- Insert Disk A in the floppy drive of your Service PC.
- Run <Setup.exe> and follow the instructions.
- Copy "User_cont.exe" into your "Clinton"-folder.

To run the „User cont“ software, „Clinton“ must be installed previously!
Please use the Application "User cont" for all adjustments in this section!

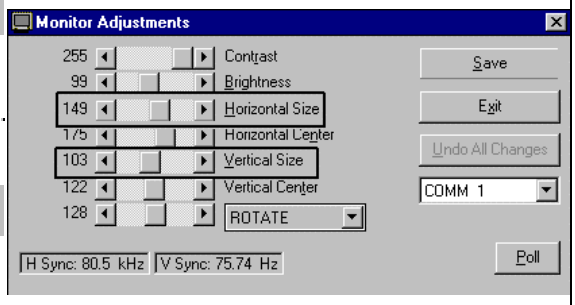
1.4.2 Overview

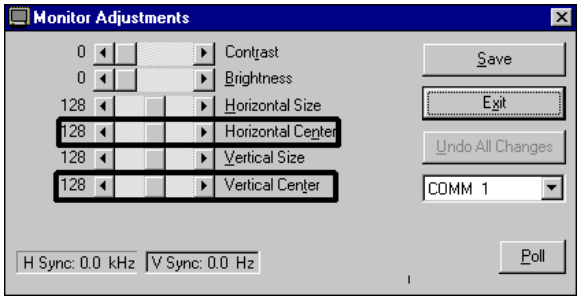
The calibration has to be done in 2 steps:
1. Adjustment of window width and height
2. Adjustment of brightness and contrast.

1.4.3 Aspect Ratio Adjustment

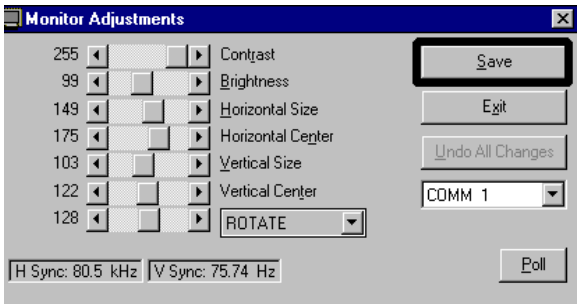
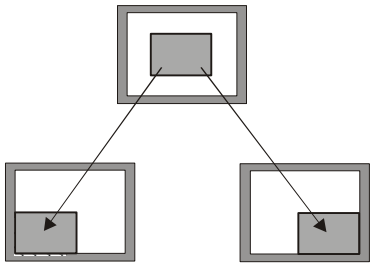
Requirements:

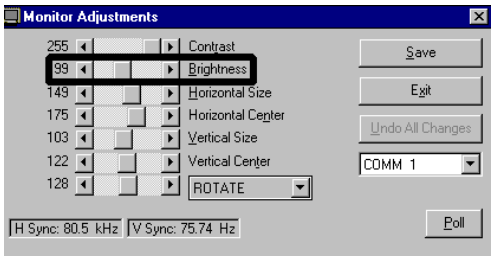
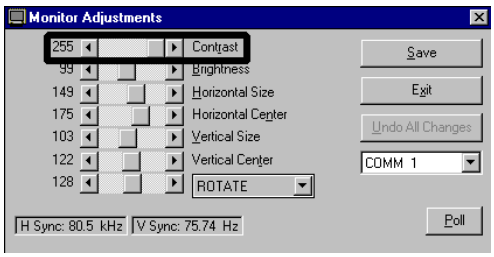
- Service PC with "User cont" Application.
- ADC "Mimosa"- Application running.
- Ruler to measure the screen width and height (length about 40cm).

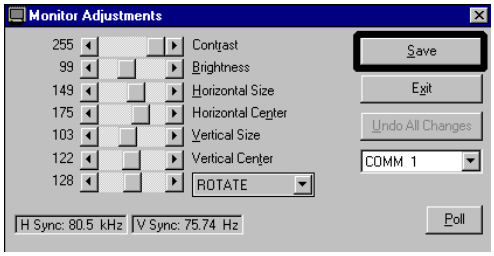
Procedure Steps	Display / Comment
(1) Connect Service PC to the service port of the monitor by using a null modem cable.	
(2) Start the "User cont" Application	
(3) Adjust with the slider bar a screen width of 36cm +/-1cm (approx. 14,15")	
(4) Adjust with the slider bar a screen height of 29cm +/-1cm (approx. 11,4" or a DIN A4).	

Procedure Steps	Display / Comment
(5) Move the application window with the sliders "Horizontal Center" and "Vertical Center" to an exactly centered position.	
(6) Check the correct position again.	
(7) If you do not want to adjust Brightness/Contrast, click on <Save> and <Exit> (8) Disconnect Service PC	

1.4.4 Calibration of Contrast and Brightness

Procedure Steps	Display / Comment
(1) Run the „User Cont“ software on the Service PC	
(2) Save the current settings by clicking on <Save>.	
(3) Check V-Sync If it is less than 76 Hz± 10%, please call GSC.	
(4) Open a new window on the workstation and type in: **`xterm -bg black`**	
(5) Zoom the black window to fullscreen mode and shift it to one corner of the screen.	
(6) Set the measuring range of the Mavo meter to 20 cd/m².	

Procedure Steps	Display / Comment
(7) Set the light output value for the black level in a way that you can recognize a little difference between the black window and the black frame (tube background). The shadow cast by the casing of the monitor does not affect the result.	
(8) Measure the luminance of your black window. If you have a value of ≤ 0,3 cd/m² the ambient light level is ok. If not, try to improve the viewing conditions.	
(9) Create a white window with about 10x10cm and put it right in the center of the screen.	
(10) Set the measuring range of the Mavo meter to 200 cd/m².	
(11) Set the light output value for the white level to 120 cd/m² with the contrast slider bar. 	
(12) Repeat steps (6) to (11) at least three times to make sure that the values of Brightness and Contrast are correct. This is necessary, because a change of one of these parameters also influences the others.	

Procedure Steps	Display / Comment
(13) Save the new settings by clicking on <Save>.	
(14) To **lock** the user keys click <Ctrl> <Shift> <L> simultaneously (to **unlock** the user keys click <Ctrl> <Shift> <U>).	
(15) Check if the monitor keys except the "power on/off"-key are disabled.	
(16) Click on <Exit> and disconnect the Service PC.	

1.4.5 Final Check

Display the SMPTE pattern:

- Click the <Open>-key and right mouse button simultaneously
- Select "Mimosa Maintenance"
- Type in your password

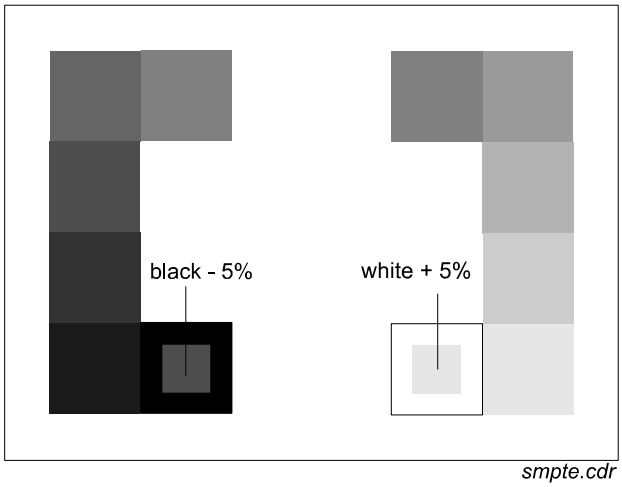
2 -Install-

4 -Monitor-

1 -SMPTE-

3 -to load the SMPTE-pattern-.

The 5% and 95% boxes must be visible correctly.



smpte.cdr